

# **Globalisation and its Impact on Poverty and Inequality: Case Study of Lower-Middle Income Countries**

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## **ABSTRACT**

One cannot pinpoint when the process of globalisation began. Some historians lay emphasis on the age of exploration during the 1400s and some argue that it began after World War II. Despite the difference of opinion regarding its inception, it cannot be denied that the pace of globalisation has increased by leaps and bounds in the past 50 years. Past literature shows conflicting results according to the income status of the countries. In this paper, we aim to analyse how globalisation has affected inequality and poverty in a group of lower-middle income countries from the period of 2004-2018. We found a strong negative correlation between poverty and income and poverty and human development. Globalisation and poverty have a very low positive correlation, and hence globalisation did not affect poverty directly as such in the time period under consideration. In case of inequality, we find a moderately positive correlation of that with globalisation. A low positive correlation was found between inequality and poverty rates. Inequality and human development significantly affected the poverty rates. An increase in inequality led to an increase in poverty as well, whereas improvements in human development led to decrease in poverty. Inequality is significantly influenced by globalisation and the GDP per capita. Globalisation exacerbated inequality, however, the parameter of GDP per capita, though significant, barely affected inequality. We can conclude that globalisation did not have a considerable effect on poverty, but on the other hand did increase inequality.

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**KEYWORDS:** *Globalisation, inequality, poverty, lower-middle income countries, growth and development, globalisation index, GDP*

## **I. INTRODUCTION**

Globalisation has affected each and every part of our lives. Commonplace objects around us are not manufactured solely in one country. The clothes we wear might be made in Bangladesh, our water bottles in China, our phones from Taiwan and Durum wheat from Canada. Globalisation has not just increased the variety of tangibles, but also opened up avenues of entertainment, business and education. While it is clear that globalisation is here to stay and become more inseparable from our lives, it is important to question how it influences poverty and inequality within a country. In this paper, we have focused on the experience of lower-middle income countries spread across Central, South and South-East Asia and South America. Some of these countries had been past colonies, and their "flavour" of globalisation had

been of a different kind, whereas the others opened up their economy organically or through controlled measures. Since these countries have had high levels of poverty and inequality in the past, it is interesting to analyse how globalisation affects these two social evils. We have used considered poverty and inequality, measured by the Head Count Ratio and Gini Coefficient respectively, to be the endogenous variables, and the Human Development Index (HDI), GDP per capita measured at Purchasing Power Parity and Globalisation measured by KOFGI to be the exogenous variables. We wish to see whether globalisation and other variables has any significant bearing on poverty and inequality. And if it does affect these two variables, then in which direction and to what extent.

## II. Literature Review

In the context of globalisation, inequality and poverty, past literature has conflicting results owing to differences in groups of countries selected. “Unemployment increases levels of inequality and poverty within society. Although bequeathed with various names and definitions, the logics of current globalisation seem to have exacerbated the problem of global unemployment, the corollary of which is endemic inequality and poverty.” [Ukpere and Slabbert, 2009]. “In-come gaps are exploding in China, India and most other Asian countries. The same phenomenon can be seen in several African and Latin American countries, already highly unequal. To a great extent, globalisation is behind both of these trends.” [Bourguignon, 2013]. “The empirical evidence also shows that the current era of globalisation has not been associated with convergence in economic out-comes; instead, less-developed countries have suffered from increases in international income inequality”.[Baddeley, 2006]. “Controlling for structural and social indicators, our results show that for developing countries, an increase in globalisation is associated with an increase in inequality.” [Kahai and Simmons, 2005] Contrary to the findings of the above papers, Neutel and Heshmati [Neutel and Heshmati, 2006] reported the following “Results from cross-sectional regression analysis show that there is a significant relationship between globalisation and poverty and income inequality. Globalisation leads to poverty reduction and it reduces income in-equality”. The improvement of development that happened over the past 200 years has been very supportive for developing countries. As Martin Wolf argues in “Financial Times” – global economic integration made both poverty and inequality fall over the past two decades for the first time in 150 years, “a decline of people in the absolute poverty, fall from 31% of the world’s population to 20%” [Held and McGrew, 2003]. For anti-globalists, the IMF’s neoliberal policies had led to greater indebtedness and even greater inequality. They believe that the neoliberal global economy would only be effective and beneficial if everyone was equal [Martell, 2010]. For example, the poverty in Sub-Saharan Africa has risen from 290 million to 415 million and “at the end of the nineteenth century, the ratio of average income in the richest countries to middle income in the poorest was 9 to 1” [Martell, 2010]. What’s more, the middle-income family today in the United States is 60 times richer than the average family in Ethiopia or Bangladesh” [Birdsall, 2016]. As Hans Rosling once said, globalisation is often accused of the creation of “the West and the rest” [Rosling et al., 2018]. On the whole, The

Washington Consensus, SAP, the World Bank and the IMF’s strive towards global liberal integration and liberal trade did not create an effective solution for the Global South to get out of poverty and inequality. My essay has introduced that globalisation and free trade “would be a good thing if all actors were equal participants” [Martell, 2010]. To conclude, from literature it is evident that while some countries benefit from globalisation, others are left behind with increasing inequality.

### A. Globalisation

Globalisation is the word used to describe the growing interdependence of the world’s economies, cultures, and populations, brought about by cross-border trade in goods and services, technology, and flows of investment, people, information and knowledge. It is the process of interaction and integration among people, companies, and governments worldwide. Countries have built economic partnerships to facilitate these movements over many centuries. However, the term gained popularity after the Cold War in the early 1990s, as these cooperative arrangements shaped modern everyday life. In 2000, the International Monetary Fund (IMF) identified four basic aspects of globalisation: trade and transactions, capital and investment movements, migration and movement of people, and the dissemination of knowledge. Academic literature commonly divides globalisation into three major areas: economic globalisation, cultural globalisation, and political globalisation. The growth in global markets has helped to promote efficiency through competition and the division of labour based on comparative advantage the specialisation that allows people and economies to focus on what they do best. Global markets also offer greater opportunity for people to tap into more diversified and larger markets around the world. It means that they can have access to more capital, technology, cheaper imports, and larger export markets. However, globalisation does not necessarily ensure that the benefits of increased efficiency are shared by all. In contrast, it has been seen in many cases that globalisation has increased the inequality between the rich and the poor countries because trade is beneficial for both the trading partners only if they are equal. Thus, countries must be prepared to embrace the policies needed, and, in the case of the poorest countries, may need the support of the international community as they do so. The broad reach of globalisation easily extends to daily choices of personal, economic, and political life. For example, greater access to modern technologies, in the world of health care, could make the difference between life and death. In the world of communications, it would

facilitate commerce and education, and allow access to independent media. Globalisation can also create a framework for cooperation among nations on a range of non-economic issues that have cross-border implications, such as immigration, the environment, and legal issues. At the same time, the influx of foreign goods, services, and capital into a country can create incentives and demands for strengthening the education system, as a country's citizens recognize the competitive challenge before them. By making the world more integrated, globalisation has led to the improvement of development that has been very supportive for developing countries. Joseph Stiglitz, a Nobel laureate and frequent critic of globalisation, has nonetheless observed that globalisation "has reduced the sense of isolation felt in much of the developing world and has given many people in the developing world access to knowledge well beyond the reach of even the wealthiest in any country a century ago".

### B. KOF Globalisation Index

The KOF Globalisation Index (KOFGI) is a composite index that measures globalisation along the economic, social and political dimension for almost every country in the world on a scale of 1 (least) to 100 (most globalised). Recently, the index was revised and additional features and new variables were included. The revised KOFGI distinguishes between de facto and de jure measures for each of the different measures of globalisation. While de facto globalisation measures actual international flows and activities (such as trade in goods and services), de jure globalisation measures policies and conditions (such as tariffs) that, in principle, affect flows and activities. Within the economic dimension of globalisation, the revised KOFGI now distinguishes between trade and financial globalisation.

Furthermore, it introduces time-varying weighting of the underlying variables, allowing the underlying relationship to slowly change over time. Overall, the index is based on 43 different variables that are aggregated to the different dimensions and the overall index.

The steps for calculating KOFGI are as follows:-

1. The first step in calculating the index includes the normalisation of the data: Each variable is transformed to an index scaled from one to one hundred, where 100 is assigned to that value of a specific variable representing the highest level of globalisation over the whole sample of countries and the entire time. It is the analogue to a transformation of the series according to the percentiles of its original distribution.
2. The second step involves performing principal components analysis on a 10-year rolling window of data to determine the time varying weights for the individual variables entering the sub-indices. With the time-varying weights for the variables, the weighting procedure has the possibility to adapt to changes in the relevance of certain variables to capture globalisation over time. While the weights of individual variables are allowed to change over years, the weights of the sub-indices are held fixed over the time horizon. The sub-indices themselves are aggregated to higher ranked indices using equal weights.
3. Once the weights are determined, the aggregation consists of adding up individual weighted variables instead of using the aggregated lower-level indices. This has the advantage that variables enter the higher levels of the index even if the value of a sub-index is not reported due to missing data.

**Table 1-Calculation of KOFGI**

Globalisation index, de facto	Weights	Globalisation index, de jure	Weights
1. Economic Globalisation, de facto	33.3	1. Economic Globalisation, de jure	33.3
1.1 Trade Globalisation, de facto	50	1.1 Trade Globalisation, de jure	50
Trade in goods	38.8	Trade regulations	26.8
Trade in services	44.7	Trade taxes	24.4
Trade partner diversity	16.5	Tariffs	25.6
		Trade agreements	23.2
1.2 Financial Globalisation, de facto	50	1.2 Financial Globalisation, de jure	50
Foreign direct investment	26.7	Investment restrictions	33.3
Portfolio investment	16.5	Capital account openness	38.5
International debt	27.6	International investment	28.2
International reserves	2.1	Agreements	
International income payments	27.1		

2. Social Globalisation, de facto	33.3	2. Social Globalisation, de jure	33.3
2.1 Interpersonal Globalisation, de facto	33.3	2. Interpersonal Globalisation, de jure	33.3
International voice traffic	20.8	Telephone subscriptions	39.9
Transfers	21.9	Freedom to visit	32.7
International tourism	21.0	International airports	27.4
International students	19.1		
Migration	17.2		

**Table 1-Calculation of KOFGI (continued)**

Globalisation index, de facto	Weights	Globalisation index, de jure	Weights
2.2 Informational Globalisation, de facto	33.3	2.2 Informational Globalisation, de jure	33.3
Used internet bandwidth	37.2	Television access	36.8
International patents	28.3	Internet access	42.6
High technology exports	34.5	Press freedom	20.6
2.3 Cultural Globalisation, de facto	33.3	2.3 Cultural Globalisation, de jure	33.3
Trade in cultural goods	28.1	Gender parity	24.7
Trade in personal services	24.6	Human capital	41.4
International trademarks	9.7	Civil liberties	33.9
McDonald's restaurant	21.6		
IKEA stores	16.0		
3. Political Globalisation, de facto	33.3	3. Political Globalisation, de jure	33.3
Embassies	36.5	International organisations	36.2
UN peace keeping missions	25.5	International treaties	33.4
International NGOs	37.8	Treaty partner diversity	30.4

Note: Weights in percent for the year 2016 Weights for the individual variables are time variant. Overall indices for each aggregation level are calculated by the average of the respective de facto and de jure indices.

Source: [Gygli et al., 2019]

### C. Poverty vs Income Inequality

Poverty is the state of not having resources or income to gain access to the basic necessities of life, including food, clean water, clothing, and shelter. Poverty also can involve issues relating to access to services like education, health care, transportation, as well as problems such as marginalisation and exclusion. Income inequality is the disparity in the distribution of income within a population. In-equality is where one part of the population has more financial resources, more access to material goods, and better financial ability to acquire goods and services to meet their needs in comparison to others. The other part of the population may have comparatively lower financial resources and thereby lesser ability to meet their needs and requirements. Thus, poverty and inequality are both terms that are used to refer to parts of the society that are unable to fulfil all their needs due to lack of financial and other resources. However, poverty is an absolute term and refers to people with an income that is much lower than what is accepted as general standards of living. Poverty puts people in survival mode trying to secure the very basic necessities of food, water, clothing and shelter. Inequality, on the other hand, is a relative term and compares the financial stability of a part of the society versus the financial situation of another part of the society where one party is better off than the other. Another major difference between the two is that poverty may be measured in terms of vulnerability where a person suffers from poverty not because they are unable to meet their obligations, but because they are barely making ends meet.

### D. Headcount Ratio (HCR)

Headcount Ratio (HCR) is one of the most widely used measures of poverty. The head count ratio (HCR) [contributors, 2020] is the population proportion that exists, or lives, below the poverty threshold or else known as the poverty line. One of the undesirable features of the head count ratio is that it ignores the depth of poverty; if the poor become poorer, the head count index does not change. Once the number of people below the poverty line is calculated, their proportion in the total population gives us the headcount ratio. Mathematically it can be calculated using the formula: -

$$HCR = q/n \text{ where}$$

q = total number of people below the poverty line

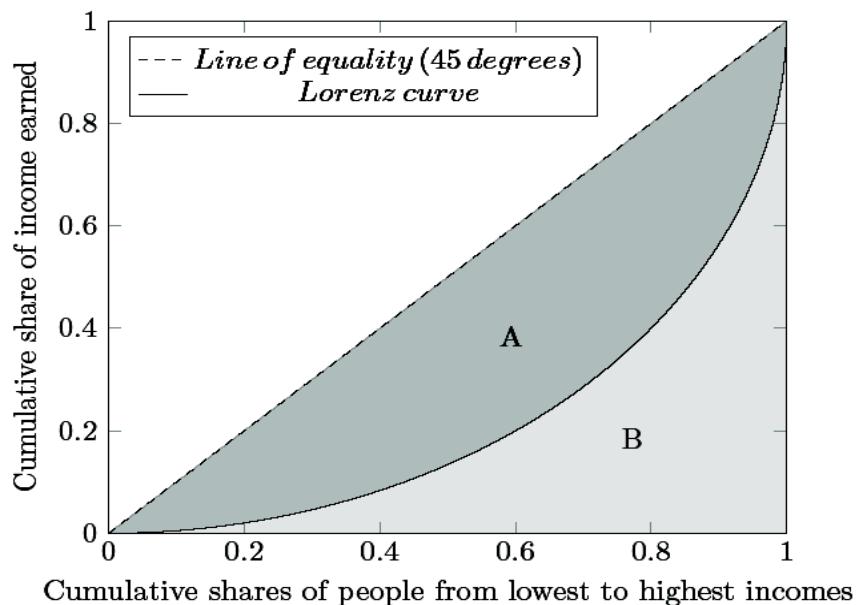
n = the total population

#### E. Gini coefficient

Gini coefficient is one of the most commonly used measures of income and wealth inequality. A Gini coefficient of 0 reflects perfect equality, where all income or wealth values are the same, while a Gini coefficient of 1 (or 100%) reflects maximal inequality among values. The Gini coefficient is usually defined mathematically based on the Lorenz curve, which plots the proportion of the total income of the population (y-axis) that is cumulatively earned by the bottom x of the population. The line at 45 degrees thus represents perfect equality of incomes. The Gini coefficient can then be thought of as the ratio of the area that lies between the line of equality and the Lorenz curve (marked A in the diagram) over the total area under the line of equality (marked A and B in the diagram). Thus Gini coefficient can be calculated as: -

$$G = A/(A + B)$$

The graph shows that the Gini coefficient is equal to the area marked A divided by the sum of the areas marked A and B, that is,  $Gini = A/(A + B)$



**Figure 1 Graphical representation of calculation of Gini coefficient**

#### F. Economic Development vs Economic Growth

Economic growth can be defined as the increase or improvement in the inflation-adjusted market value of the goods and services produced by an economy over time. Statisticians conventionally measure such growth as the percentage increase in the real gross domestic product, or real GDP. Previously, policymakers and economists often treated economic growth as an all-encompassing unit to signify a nation's development, and correlating it to improved economic prosperity and societal well-being. Economic growth had emerged as both a leading objective, and indicator, of national progress in many countries, even though GDP was never intended to be used as a measure of well-being. However, with time it was observed that economic growth falls short of measuring the holistic development of the economy and the well-being of the society. This does not take into account income inequality, environmental quality, levels of health and education, unemployment rate, gender discrimination and other such factors which directly determine the standard of living and well-being of society. Thus, over the last two decades the focus has been shifted to the much broader concept of economic development. Economic development is defined as the process by which the economic well-being and quality of life of a nation can be improved according to the targeted goals and objectives. The broader concept of economic development has been adopted by the United Nations, first through the Millennium Development Goals (MDGs) of 2000, and then through the Sustainable Development Goals (SDGs) of 2015. The conceptualization of this all-encompassing "economic development", has been one of the sure advances during the past decade of thinking, and represents a move toward a "new enlightenment" in assessing trajectories of achievement.

#### G. Human Development and HDI

The United Nations Development Programme (UNDP) defines human development as "the process of enlarging people's choices", said choices allowing them to "lead a long and healthy life, to be educated, to enjoy a decent standard of living", as well as "political freedom, other guaranteed human rights and various ingredients of self-

respect". Thus, human development is about much more than economic growth, which is only a means of enlarging people's choices. Fundamental to enlarging these choices is building human capabilities-the range of things that people can do or be in life. Human development is measured with the help of the Human Development Index (HDI). The Human Development Index (HDI) is a summary measure of achievements in three key dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living. The HDI is the geometric mean of normalised indices for each of the three dimensions. The health dimension is assessed by life expectancy at birth, the education dimension is measured by the mean of years of schooling for adults aged 25 years and more and expected years of schooling for children of school entering age. The standard of living dimension is measured by gross national income per capita. The HDI uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI. The scores for the three HDI dimension indices are then aggregated into a composite index using geometric mean.

## H. Lower-Middle Income Countries

The World Bank classifies countries (for the current 2023 fiscal year) according to the following table using the income of the countries from 2021 -

**Table 2-Classification of Countries according to Income**

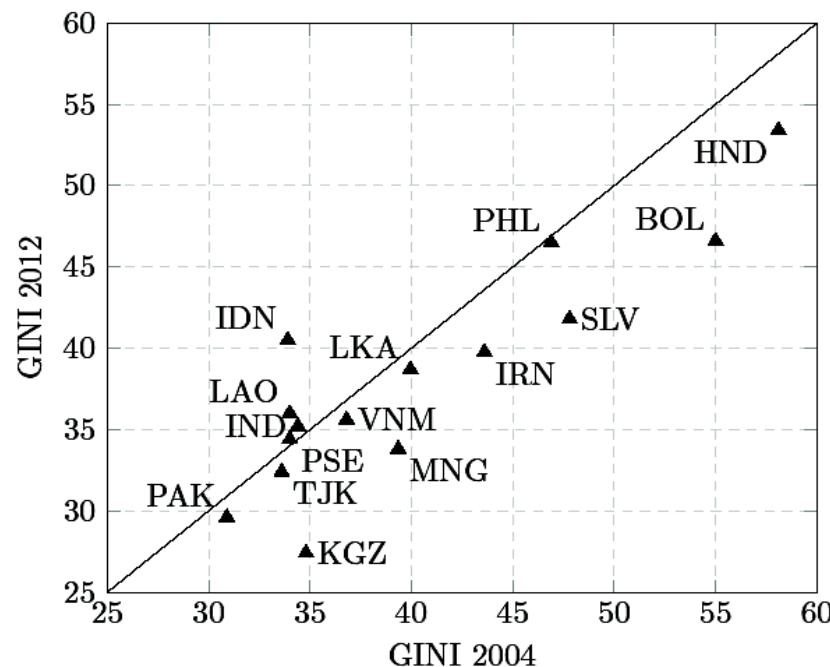
Classification	GNI Per Capita
Low Income Countries	\$1,085 or less
Lower-Middle Income Countries	between \$1,086 and \$4,255
Upper-Middle Income Countries	between \$4,256 and \$13,205
High Income Countries	Above \$13,205

Source: [Hamadeh et al., 2023]

This classification is purely on the basis of the GNI per capita which does not take into account income and wealth inequality which is pervasive even in high income countries. We also note the large disparity between the highest per capita income of a low-income country and the lowest per capita income in a high-income country. The lowest earner in a high-income country earns 1217% more than the highest earner in a low-income country in the same year. Amongst the lower-middle income countries we have chosen, some have recently gone through economic and political instability, such as Sri Lanka, Pakistan and Islamic Republic of Iran, whereas others like India, Vietnam, Philippines and Bolivia face internal tensions along the lines of caste, class, gender and religion. Others such as Mongolia face military belligerency from neighboring countries. Society in the above-mentioned countries is highly unequal, with only a small section enjoying considerable luxuries whereas large swathes of the population live in deprivation of basic needs such as quality health and education.

## III. Framework and Modelling

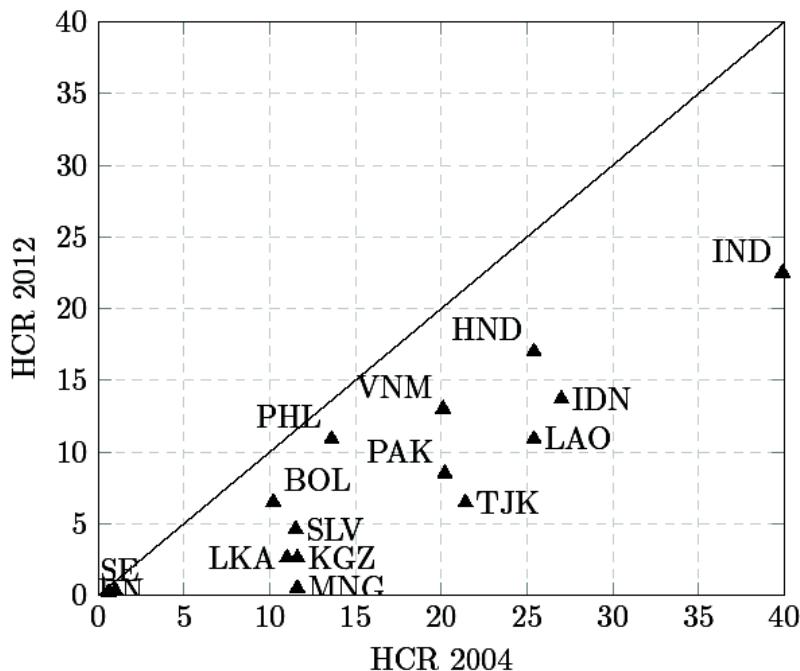
The objective of this study is to analyse the impact of globalisation on poverty and income inequality. Although poverty is different from income inequality, these two concepts are distinctly related.



**Figure 2 Change in GINI**

Poverty and inequality are concepts very much related to one another in that they refer to a situation in which people do not have the ability to fulfill all their needs and wants. Both these measures are important to compute the well-being of a population of a country and their standards of living. There is a two way causality between the two and in order to capture this feedback mechanism that works between them, a simultaneous equation model has been used in this study, with poverty (measured by HCR) and income inequality (measured by Gini coefficient) being the two endogenous variables of the model which are jointly determined.

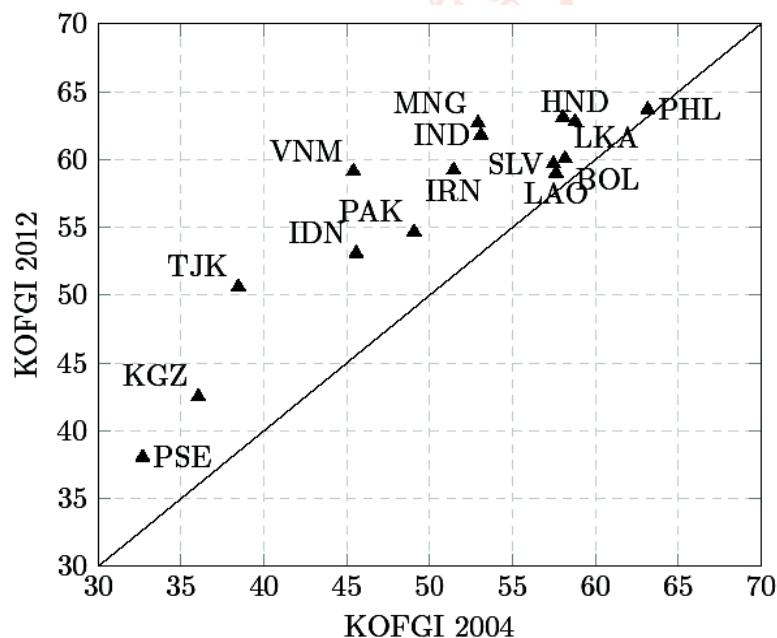
Moreover, in addition to globalisation (measured by KOFGI), economic growth (measured by GDPCP) and human development (measured by HDI) have also been taken into account as the exogenous variables of this model. This is because poverty and inequality does not depend on globalisation only.



**Figure 3 Change in HCR**

The argument that globalisation does not necessarily lead to decrease in poverty and inequality can be shown for the data that we have considered through the following graphs. In the graphs we can see that globalisation has increased from 2004 to 2012 for all countries under consideration. However, income inequality has increased for some countries like India, Iran and Lao PDR, has remained more or less the same for some countries like Philippines and Vietnam, while it has decreased for the other countries. It can be observed that poverty has decreased for all countries, but the HCR is not a very holistic measure and it does not take into consideration all aspects of poverty. Moreover, it ignores the depth of poverty.

#### A. Variables and Data



**Figure 4 change in kofgi**

Source: [Kahai and Simmons, 2005]

In fact, globalisation merely leads to economic growth or growth in GDP of a country and this does not automatically guarantee decrease in poverty and inequality. Whether poverty and inequality will decrease as a result of globalisation depends on how this growth in GDP and other gains from trade are used by the country and the kind of policies and social interventions adopted by the government. No matter how globalised a country is, poverty and inequality will not decrease if the social indicators are not improving and the benefits of globalisation are not percolating to the bottom layers of the society. Thus, HDI is a much more holistic measure which affects poverty and income inequality.

Countries considered in the paper Bolivia (BOL), El Salvador (SLV), Honduras (HND), India (IND), Indonesia(IDN), Iran Islamic Republic (IRN), Kyrgyz Republic (KGZ), Lao PDR (LAO), Mongolia (MNG), Pakistan (PAK), Philip-pines (PHL), Sri Lanka (LKA), Tajikistan (TJK), Vietnam (VNM), West Bank and Gaza (PSE). Time period considered years 2004, 2007, 2009-10, 2012, 2015-16, 2018. All data used in the study is secondary data, collected from the Data Bank of the World Bank and the archive of the ETH Zurich. The variables used and their descriptions are as follows:

- KOFGI KOF- globalisation index has been used for 15 lower-middle income countries as developed by Axel Dreher of ETH Zurich, Switzerland. It ranges from 1 to 100.[Kahai and Simmons, 2005]
- GDPCP- Gross Domestic Product per capita of each country at purchasing power parity (constant 2021 international \$) as defined by the World Bank. The unit is in \$.

- HDI- The Human Development Index has been considered for 15 lower-middle income countries as defined by the World Bank. Its value ranges from 0 to 1.
- HCR- Head count ratio calculated at national poverty lines and compiled and calculated by the World Bank for 15 lower-middle income countries. Its value ranges from 0 to 1.
- GINI- GINI index data based on primary household survey data obtained from government statistical agencies and World Bank country departments for 15 lower-middle income countries. Its value ranges from 0 to 1.

#### IV. Correlations

##### A. Relation between Poverty and Globalization Index, Human development Index and Income

To study the extent to which Globalization Index (KOFGI), Human development Index (HDI) and GDP (GDPCP) are correlated to poverty we have found the values of correlation coefficient between poverty, that is, head count ratio with the other three variables. The following results were obtained:

**Table 3-Correlation between HCR and KOFGI**

	HCR	KOFGI
HCR	1.00	
KOFGI	0.0606	1.00

A correlation coefficient of 0.061 between HCR and KOFGI signifies a weak positive correlation between the two.

**Table 4-Correlation between HCR and GDPCP**

	HCR	GDPCP
HCR	1.00	
GDPCP	-0.4547	1.00

The correlation coefficient of -0.4547 signifies a moderate negative correlation between HCR and GDP. This can be explained by the fact that as economies grow and become more developed, they tend to have more job opportunities, higher wages, and better social safety nets, which can reduce poverty rates. Conversely if poverty rates are decreasing then it means that each person in the economy is earning more than earlier hence GDP per capita increases. Thus, while the negative relationship can be explained, its direction cannot be explained. Whether GDP affects HCR or vice versa cannot be determined from the correlation coefficients.

The correlation coefficient of 0.6557 signifies a strong negative correlation between HCR and HDI. This can be attributed to the fact that HDI contains the income index (which is used as a measure of income) which directly affects the poverty rates. As a country's HDI increases, it typically means that the population is enjoying better standards of living, greater access to education and healthcare, and more economic opportunities. Conversely, a high HCR indicates that a large percentage of the population is living below the poverty line, which can limit access to education, healthcare, and other resources. In general, countries with higher HDIs tend to have lower poverty rates and HCRs. Just like the previous case, here also the direction of the relationship is indeterminable.

**Table 5-Correlation between HCR and HDI**

	HCR	HDI
HCR	1.00	
HDI	-0.6557	1.00

##### B. Relation between Inequality Index and Globalization Index, Human development Index and Income

The Inequality Index, that is, Gini data has been correlated with Globalization Index (KOFGI), Human development Index (HDI) and GDP (GDPCP) to study the effect of these variables on Gini. The following results were obtained:

**Table 6-Correlation between GINI and HDI**

	GINI	HDI
GINI	1.00	
HDI	0.1116	1.00

A correlation coefficient of 0.1116 signifies a weak positive correlation between Gini and HDI.

**Table 7-Correlation between GINI and GDPCP**

	GINI	GDPCP
GINI	1.00	
GDPCP	0.1308	1.00

A correlation coefficient of 0.1308 signifies a weak positive correlation between Gini and GDP.

A correlation coefficient of 0.4954 signifies a moderate positive correlation between Gini and KOFGI. It could be argued that as countries become more integrated into the global economy, income inequality may increase due to factors such as outsourcing, wage competition, and changes in the composition of industries. This could lead to a positive relationship between the Gini coefficient and globalisation index, with more globalised countries experiencing higher levels of income inequality. However, the direction of the relationship cannot be determined.

**Table 8-Correlation between GINI and KOFGI**

	GINI	KOFGI
GINI	1.00	
KOFGI	0.4954	1.00

## V. Regression

As mentioned earlier the simultaneous equation model has been used here for regression based on the panel data. As already mentioned, here GINI and HCR are the endogenous variables whereas HDI, KOFGI and GDPCP are the exogenous variables. The total number of endogenous variables is two and that of exogenous variables is three. As we have two endogenous variables, we have two regression equations in the system. To satisfy the rank and order condition and for the equations to be exactly identified one exogenous variable has to be excluded from each equation. Based on the correlation relationships between the endogenous and the exogenous variables as mentioned in the earlier section, the exogenous variable with the least correlation with each endogenous variable has been excluded while doing the regression. Thus, KOFGI and HDI have been excluded from the regression equation of HCR and GINI respectively. Here are the two equations:

$$HCR = \beta_{11} + \beta_{21}GINI + \gamma_{11}HDI + \gamma_{21}GDPCP + \epsilon_1$$

$$GINI = \beta_{12} + \beta_{32}HCR + \gamma_{22}GDPCP + \gamma_{32}KOFGI + \epsilon_2$$

Here the  $\beta$ s in each equation represent the coefficients of the endogenous variables and the constant. Whereas the  $\gamma$ s represent the coefficients of the exogenous variables and  $\epsilon$ s are the errors. Ordinary Least Squares (OLS) method cannot be used to estimate the parameters in a simultaneous equation model. The reason being the endogenous variables are determined by both their own equation and the equations of other endogenous variables in the system. This leads to a problem of endogeneity, that is, the explanatory variables are correlated with the error term in the equation. To overcome this problem two stage least squares (2SLS) has been used here as a method of estimation.

In the regression equation of HCR, the 2SLS estimates signify that GINI and HDI are significant in explaining HCR. The coefficient of GINI is significant at 5% level and has a positive value 0.3468 units, that is, for every one unit increase in GINI, the HCR increases by 0.3468 units. The coefficient of HDI is significant at 1% level and has a negative value 81.61 units, that is, for every one unit increase in HDI, the HCR decreases by 81.61 units. The constant is also significant at 1% level and has a positive value of 49.15 units, that is, even when all the other variables are zero, HCR has a value of 49.25 units. The R square is 0.4604 which means that this model can explain HCR by 46.04%.

**Table 9-Regression Table**

Endogenous variables: HCR GINI  
Exogenous variables: HDI GDPCP KOFGI  
Method: Two Stage Least Squares (2SLS)

Equation	Obs	Parms	RMSE	R-sq	F-Stat	P
HCR	120	3	6.148768	0.4604	32.29	0.0000
GINI	120	3	6.463776	0.0972	11.92	0.0000

	Coef.	Std. Err.	t	P>  t	[95% Conf. Interval]	
HCR						
GINI	0.346847	.1644612	2.11	0.036	.0228187	.6708754
HDI	-1.60714	11.60361	-7.03	0.000	-04.4691	-8.74523
GDPCP	-0000539	.0002202	-0.24	0.807	-0004878	.00038
Cons	49.14616	8.788978	5.59	0.000	31.82975	66.46257
GINI						
HCR	-3226351	.1723442	-1.87	0.062	-6621948	.0169246
KOFGI	.5206133	.0925179	5.63	0.000	.3383307	.7028958
GDPCP	-0005744	.0002881	-1.99	0.047	-0011419	-6.81e-06
Cons	15.99472	4.053524	3.95	0.000	8.008294	23.98114

In the regression equation of GINI, the 2SLS estimates signify that KOFGI is significant in explaining GINI. The coefficient of KOFGI is significant at 1% level and has a positive value of 0.5206 units, that is, for every one unit increase in KOFGI, the GINI increases by 0.5206 units. The coefficient of GDPCP is significant at 5% level and has a negative value of 0.0006, that is, for every one unit increase in GDPCP, GINI decreases by 0.0006 units. Due to its such low value GDPCP has almost negligible effect on GINI in spite of its coefficient being significant. In this equation also the constant is significant at 1% level and has a positive value of 15.99 units, that is, even when all the other variables are zero, GINI has a value of 15.99 units. Here the R square is mere 0.097, that is, this model is only able to explain 9.7% of GINI.

## VI. Findings and Analysis

On regressing HCR on Gini, HDI and GDPCP we find that the inequality and human development is significant in affecting the head count ratio; while we find that GDP has no significant effect on the head count ratio.

- A decrease in inequality necessarily decreases poverty. When the income of the poorer section as the proportion of the GDP grows at a faster rate than the growth of share of income in the GDP of the richer section the gap between the wealth of two strata decreases.
- An increase in HDI leads to decrease in poverty in an economy. HDI includes the income index which directly impacts HCR. Besides this, HDI is a holistic measure which includes social indicators like health and education as well and improvement in the social indicators is a sustainable method of decreasing poverty.
- Mere economic growth cannot guarantee a decrease in poverty if the trickle-down effect does not work. In the absence of social measures or governmental re-distributive policies economic growth may only benefit a particular class of people without uplifting the masses in general.

On regressing Gini on HCR, KOFGI and GDPCP we find that GDP and globalisation is significant in affecting the Gini while the head count ratio has no significant effect on the Gini.

➤ When GDP increases there is negligible decrease in inequality because an increase in GDP cannot guarantee a redistribution in the share of income in the poorer and richer section of the society if proper policy interventions are adopted by the government.

➤ We see that globalisation increases the gap between the rich and the poor and this is mainly true for lower and lower-middle income countries. This is because in these countries the benefits of globalisation are disproportionately distributed between the various income groups; it is the rich who mainly enjoy the benefits of globalisation while the common people are excluded from this. There is wide disparity between the rural and urban population as well when it comes to enjoying the fruits of globalisation. In the recent past during the Covid-19 lockdown urban students irrespective of being rich or poor still had access to low-cost internet and one or other electronic device to access online classes. However, in the rural areas due to lack of stable and widespread internet connectivity and other technological disadvantages the students were excluded from online education. As a result, they fell far behind their urban counterparts and there was a drastic increase in the rural dropout rates. Unless technological advancements brought about by globalisation are not extended equitably to everyone regardless of their area of residence

and economic status, inequality will continue to rise.

- A decrease in HCR does not necessarily imply a decrease in Gini coefficient. It may so happen that the income of the poorer section of the society increases by a small amount such that those people who were just below the poverty line move above the poverty line and hence HCR decreases. However, the increase in the income of the poorer section is so insignificant that the share of the income of the poorer section in the aggregate GDP of the country remains the same. As a result, there is no change in Gini coefficient

## VII. Conclusion

- For lower-middle income countries we found a strong negative correlation between poverty and income and poverty and human development. Globalisation and poverty have a very low positive correlation, and hence globalisation did not affect poverty directly as such in the time period under consideration. In case of inequality, we find a moderately positive correlation of that with globalisation. A low positive correlation was found between inequality and poverty rates.
- Inequality measured by Gini and human development measured by HDI significantly affected the poverty rates, measured by HCR. An increase in inequality led to an increase in poverty as well, whereas improvements in human development led to decrease in poverty.
- Inequality is significantly influenced by globalisation and the GDP per capita measured at Purchasing Power Parity. Globalisation exacerbated inequality, however, the parameter of GDP per capita, though significant, barely affected inequality.

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